



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G01N 33/50, 21/62, 21/77, 21/64	AI	(11) International Publication Number: WO 99/18434 (43) International Publication Date: 15 April 1999 (15.04.99)
(21) International Application Number: PCT/US98/21193 (22) International Filing Date: 6 October 1998 (06.10.98) (30) Priority Data: 08/944,850 6 October 1997 (06.10.97) US (71) Applicant (for all designated States except US): TRUSTEES OF TUFTS COLLEGE [US/US]; Tufts University, Ballou Hall, Medford, MA 02155 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): WALT, David, R. [US/US]; 4 Candlewick Close, Lexington, MA 02178 (US). DICKINSON, Todd, A. [US/US]; Apartment 1133, 3435 Lebon Drive, San Diego, CA 92122 (US). (74) Agent: CREEHAN, R., Dennis; P.O. Box 750070, Arlington Heights, MA 02175-0070 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.
(54) Title: SELF-ENCODING FIBER OPTIC SENSOR (57) Abstract <p>A microsphere-based analytic chemistry system is disclosed in which self-encoding microspheres having distinct characteristic optical response signatures to specific target analytes may be mixed together while the ability is retained to identify the sensor type and location of each sensor in a random dispersion of large numbers of such sensors in a sensor array using an optically interrogatable encoding scheme. An optical fiber bundle sensor is also disclosed in which individual microsphere sensors are disposed in microwells at a distal end of the fiber bundle and are optically coupled to discrete fibers or groups of fibers within the bundle. The identifies of the individual sensors in the array are self-encoded by exposing the array to a reference analyte while illuminating the array with excitation light energy. A single sensor array may carry thousands of discrete sensing elements whose combined signal provides for substantial improvements in sensor detection limits, response times and signal-to-noise ratios.</p> 		